



{In Archive} Responses to EPA Risk Assessment Comments

Paul Rosasco to: Dan Gravatt, 'Muenks, Shawn', Rich Kapuscinski

04/16/2011 02:52 PM

Cc: "Merrigan, Jessie", "Whitby, Kathleen", VWarren, "Charlotte Neitzel", "Dan Feezor", "Mike Bollenbacher", "Bob Jelinek"

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7 attachments



EPA 33 - Risks to the Public.docxEPA 46 - Ionizing Radiation.doc



EPA 24, 31 & 39 - Long-Term Risk Calculations.docEPA Additional Comment #48 Screening level selection.docx



EPA Additional Comment #49 Using RESRAD for cover materials #Template.docx



EPA Additional 51 - Risk Calculations.docEPA Additional 50 - Risk Calculations.doc

The attached files address the following risk assessment related comments:

EPA Specific Comments 24, 31, 33, 39 and 46

EPA Risk Assessment Comments 1 through 40(contained in two separate zip files sorted by long-term and short-term risk evaluations)

EPA Additional Comments 48, 49, 50 and 51

MNDR Risk Assessment Comments 118 through 138

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EPA Specific Comment # 33 – Risks to the Public

Comment:

Section 6.2.2.5.1, page 104: This section focuses primarily on risks to workers and traffic accidents and does not adequately discuss risks to the public. These risks include but are not limited to dust and radon migrating off-site and material falling off of or out of trucks and railcars along the transportation route. This section must be rewritten to focus on community protection during the remedial action.

Discussion:

A brief discussion of public risks from dusts and gases released during has been added to Section 6.2.2.5.1. Risks from exposure to loose materials falling off trucks and railcars will not be added to the discussion of risk.

Trucks will be filled in a controlled area. Their loads will be covered and their exterior surfaces will be monitored. If loose contamination is identified, the exteriors of the vehicles will be decontaminated and resurveyed before they are released from the controlled area. A similar process will be used to survey and release loaded rail cars. The use of vehicle covers and exit inspections will be added to the discussion to explain why there will be no loose material available to spread contamination during transportation of RIM on public roads or railways.

Proposed Text Change:

6.2.2.5.1 Protection of the Community during Remedial Actions

Unless a rail spur is extended onto the West Lake Landfill site, significant additional local truck traffic would occur during the construction period for the “complete rad removal” with off-site disposal alternative. The additional truck traffic results from transfer of the excavated RIM to a local off-site truck-to-rail trans-loading location. It is estimated that over 14,000 round trips of semi-trucks would be required to truck the excavated RIM to a rail spur location. These additional truck trips would result in additional physical risk due to potential traffic accidents.

Transfer of RIM from the site to an off-site rail trans-loading facility, by rail to the area of the disposal facility, and offloading and transfer to the disposal facility would be required. Vehicle covers and strict inspection procedures would prevent RIM from escaping vehicles during routine operations, but there would be an increased potential for release of RIM as a result of traffic or train accidents and the extensive amount of additional handling of the RIM required for this alternative. The risk assessment (Appendix F) includes an estimate of the projected incidence of transportation accidents associated with each alternative. For the “complete rad

removal” with off-site disposal alternative, the projected incidence of transportation accidents associated with importing of materials for construction of the multi-layer landfill cover is 0.74 meaning that there is a 74% probability that an accident would occur under this alternative.

Disturbing the waste material may expose members of the public to airborne dust and gases like methane and radon. An integrated system of occupational and environmental monitoring will allow construction managers to intervene if exposure levels become unacceptable. Excavation of existing waste materials will undoubtedly result in odor emissions during the period of time that existing wastes may be handled or exposed. Mitigation of odors through engineering means is limited.

For the “complete rad removal” with off-site disposal alternative, vehicle operations for excavation, loading, and transport of the RIM to an offsite disposal facility and for landfill regrading, import of materials to be used to construct the multilayer landfill cover, and construction of the cover are projected to emit 22,600 tons of carbon dioxide to the atmosphere (Appendix G).

EPA Specific Comment # 46: Table 1, Missouri Radiation Regulations, Protection Against Ionizing Radiation: The radionuclides present at the site do emit ionizing radiation in the form of alpha and beta particles contrary to the "remarks" provided in the table. While it is true that this weakly penetrating, ionizing radiation is of less concern than the strongly penetrating but nonionizing gamma radiation emitted by these radionuclides while they are largely incorporated into and shielded by the overall waste mass, excavating these radionuclides so that receptors can come in contact with them will expose these receptors to ionizing radiation. This exposure should be acknowledged here and considered in the risk assessment.

Response #46:

Nonionizing radiation (like microwaves, radio waves, laser light) are not commonly associated with the decay of naturally occurring radioactive materials like those present at the West Lake Landfill. It is correct that excavation of RIM materials will result in potential exposure to alpha, beta, and gamma ionizing radiation. This radiation is the basis of the EPA slope factors for radiocarcinogens. The text will be revised accordingly.

However, such a revision will not change the ARARs classification of the Missouri radiation regulations for protection against ionizing radiation. The National Contingency Plan (NCP) published in the Federal Register mandates that EPA shall use the 10^{-6} to 10^{-4} range of acceptable risks as health-based guidance at CERCLA sites. The Missouri regulation on ionizing radiation (19 CSR 20-10.040) is not considered "applicable" because it is a dose-based regulatory limit and not a risk-based limit, as required by the NCP. The Missouri regulation is relevant and appropriate because it uses health-based limits to govern worker exposures from nonexempt sources.

Proposed Actions #46:

The first paragraph in the "Remarks" column of the cited ARAR entry in Table 1 will be revised to read:

As this regulation uses dose-based limits to regulate radiation exposures to workers, it is not directly applicable; however, as the regulation does provide a health-based standard of protection for workers exposed to nonexempt sources of ionizing radiation, it is potentially relevant and appropriate.

**RESPONSE TO EPA COMMENTS 24, 31 AND 39 – LONG-TERM RISK
CALCULATIONS PRESENTED IN SUBSECTIONS 6.2.1.3.1, PAGE 92; 6.2.2.3.1, PAGE
102; AND 6.2.3.3.1, PAGE 114**

EPA Specific Comment #24:

Section 6.2.1.3.1, page 92: This section should explicitly state whether the calculated risks are from residual radionuclides below the cleanup level, the nonradiological contaminants in the landfill, or both. It may be appropriate to calculate radiological and nonradiological risks separately if both are contributing to the overall risk. Any remaining noncarcinogenic risks should also be identified.

EPA Specific Comment #31:

Section 6.2.2.3.1, page 102: This section should explicitly state whether the calculated risks are from residual radionuclides below the cleanup level, the nonradiological contaminants in the landfill, or both. It may be appropriate to calculate radiological and nonradiological risks separately if both are contributing to the overall risk. Any remaining noncarcinogenic risks should also be identified.

EPA Specific Comment #39:

Section 6.2.3.3.1, page 114: This section should explicitly state whether the calculated risks are from residual radionuclides below the cleanup level, the nonradiological contaminants in the landfill, or both. It may be appropriate to calculate radiological and nonradiological risks separately if both are contributing to the overall risk. Any remaining noncarcinogenic risks should also be identified.

Discussion:

These three comments request clarification of the same issue for each alternative. The three subsections cited in the comments have been revised to clarify that residual RIM will be located beneath a cover in all alternatives. This cover will isolate the residual RIM from potential receptors. Once the cover is installed, the only plausible exposure pathways are surface gamma irradiation and radon emissions through the cover system. No other complete exposure pathway exists; therefore, carcinogenic and non-carcinogenic effects from exposures which require dermal contact, inhalation of particulates, or ingestion of soil were not calculated.

Proposed Text Change to Subsection 6.2.1.3.1:

Replace in last two paragraphs of sub-section 6.2.1.3.1 with the following text:

These calculated risks are attributable to gamma radiation and radon emissions from the RIM which remains at the site after implementation of the containment ROD remedy. Given that the RIM would be capped and thus rendered inaccessible, along with the use of access restrictions and institutional controls, direct contact with RIM and exposure from ingestion, inhalation, or dermal contact with the waste materials is not expected to occur. These also are the primary exposure pathways for any non-radiological COCs which may be present in Areas 1 and 2 under the ROD remedy. Because no complete exposure pathway would exist for such materials after completion of the cap

construction, the landfill waste materials would not be expected to produce non-carcinogenic effects or carcinogenic risks.

The calculated risk levels are below EPA's target risk range of 1×10^{-6} to 1×10^{-4} and the magnitude of the radiological carcinogenic risk from capped RIM in these two remediated areas is acceptable. These risks do not specifically include potential exposures from non-radiological landfill waste after construction is complete; however, those wastes will also be covered by a cap which would prevent exposures. Additional information regarding the risk assessment calculations is presented in Appendix F.

After soils containing radionuclide concentration above the cleanup levels are removed from the Buffer Zone/Crossroad Property, residual risks posed by the remaining radionuclide-impacted soil on these properties, if any, would also be within EPA's acceptable risk range and should be indistinguishable from variations in background levels.

Proposed Text Change to Subsection 6.2.2.3.1:

Replace in last two paragraphs of sub-section 6.2.2.3.1 with the following text:

These calculated risks are attributable to gamma radiation and radon emissions from the radionuclide occurrences that would remain after implementation of the "complete rad removal" with offsite disposal alternative. Any such materials would be present at levels which do not require remediation. Additionally, the remaining landfill waste, in addition to any residual RIM, would be capped and access to and future use of the capped waste disposal areas would be limited by site access restrictions and institutional controls. Direct contact with residual RIM under the cap and ingestion, inhalation, or dermal contact with such materials is not expected to occur. These also are the primary exposure pathways for any non-radiological COCs which may be present in the landfill wastes which will remain in Areas 1 and 2 after removal of the RIM. Because no complete exposure pathway would exist for such materials after completion of the cap construction, the landfill waste materials would not be expected to produce non-carcinogenic effects or carcinogenic risks.

The calculated risk levels are below EPA's target risk range of 1×10^{-6} to 1×10^{-4} and the magnitude of the radiological carcinogenic risk from residual RIM in these two remediated areas is acceptable. These risks do not specifically include potential exposures from non-radiological landfill waste after construction is complete; however, those wastes will also be covered by a cap which would prevent exposures. Additional information regarding the risk assessment calculations is presented in Appendix F.

After soils containing radionuclide concentration above the cleanup levels are removed from the Buffer Zone/Crossroad Property residual risks posed by the remaining radionuclide impacted soil on these properties, if any, would also be within EPA's acceptable risk range and should be indistinguishable from variations in background levels.

Proposed Text Change to Subsection 6.2.3.3.1:

Replace in last two paragraphs of sub-section 6.2.3.3.1 with the following text:

These calculated risks are attributable to gamma radiation and radon emissions from any radionuclide occurrences that would remain in Areas 1 and 2 and in the RIM located in the onsite cell after implementation of the “complete rad removal” with onsite disposal alternative. Any residual RIM materials in Areas 1 and 2 would be present at levels which do not require remediation, and the onsite disposal cell would provide full containment of the relocated RIM materials. Additionally, the RIM in both locations would be capped, and access to and future use of the waste areas would be limited by site access restrictions and institutional controls. Direct contact with the RIM in the onsite disposal cell and the residual RIM under the cap at Areas 1 and 2 and exposure by ingestion, inhalation, or dermal contact with such materials is not expected to occur. These also are the primary exposure pathways for any non-radiological COCs which may be mixed with the relocated RIM in the onsite disposal cell or which may be present in the landfill wastes which will remain in Areas 1 and 2 after removal of the RIM. Because no complete exposure pathway would exist for such materials after completion of the onsite disposal cell and cap construction in Areas 1 and 2 after relocation of the RIM, the landfill waste materials would not be expected to produce non-carcinogenic effects or carcinogenic risks.

The calculated risk levels are below EPA’s target risk range of 1×10^{-6} to 1×10^{-4} and the magnitude of the radiological carcinogenic risk from RIM in the onsite disposal cell and residual RIM in Areas 1 and 2 is acceptable. These risks do not specifically include potential exposures from non-radiological landfill wastes after construction is complete; however those wastes will also be covered by caps which would prevent exposures. Additional information regarding the risk assessment calculations is presented in Appendix F.

After soils containing radionuclide concentration above the cleanup levels are removed from the Buffer Zone/Crossroad Property residual risks posed by the remaining radionuclide impacted soil on these properties, if any, would also be below within EPA’s acceptable risk range and should be indistinguishable from variations in background levels.

EPA Additional Comment #48**Comment:**

Appendix F, page 6, footnote a: This footnote states that Region 9 soil screening levels were used for chemical risk assessment. The final report should use the Regions 3, 6, and 9 regional screening level calculator in order to provide a more accurate, up-to-date evaluation.

Discussion

The requested changes have been made to Table 4-2 and footnote a.

Proposed Text Changes:

A revised screening table is attached to this response.

**Table Error! No text of specified style in document.-1 Summary of Chemical Toxicity Screen
for Surface Soil**

Analyte	Risk- or HI- Based Industrial Screening Values ^a	Maximum Soil Concentrations ^b		Selection/Screening of COCs in Soils ^c		Screening Result Changed from Baseline?
	(mg/kg)	Area 1 (mg/kg)	Area 2 + Boundary (mg/kg)	Area 1 0-1 ft	Area 2 + Boundary 0-1 ft	
Inorganic Chemicals						
Arsenic	1.60x10 ⁰⁰	220	35	YES	YES	no
Beryllium	2.00x10 ⁰³	3.3	2.2 ^f	no	no	no
Cadmium	8.00x10 ⁰²	7.9	6.3 ^f	no	no	no
Chromium (VI)	5.60x10 ⁰⁰	31	49 ^f	YES	YES	Added
Copper	4.10x10 ⁰⁴	2,300	360	no	no	no
Lead	8.00x10 ⁰²	320	2,200	no	YES	no
Mercury	3.40x10 ⁰¹	0.17	0.27	no	no	no
Nickel	2.00x10 ⁰⁴	3,600	680	no	no	no
Selenium	5.10x10 ⁰³	250	38	no	no	no
Thallium	1.40x10 ^{01 d}	1.2	nr ^e	no	no	no
Uranium	3.10x10 ⁰³	437.5	875	no	no	Deleted
Zinc	3.10x10 ⁰⁵	120	400 ^f	no	no	no
Organic Chemicals						
Acetone	6.30x10 ⁰⁵	0.034	0.038	no	no	no
Bis(2-ethylhexyl) phthalate	1.20x10 ⁰²	7.8	77	no	no	no
Di-n-octylphthalate	1.80x10 ^{03 d}	3	12	no	no	no
1,4-Dichlorobenzene	1.20x10 ⁰¹	0.042	0.0065	no	no	no
Fluoranthene	2.20x10 ⁰⁴	nr	8.5	no	no	no
Xylenes	2.70x10 ⁰³	0.037	0.012	no	no	no
Pesticides/PCBs						
Aldrin	1.00x10 ⁻⁰¹	nr	0.0017	no	no	no
Aroclor-1254	7.40x10 ⁻⁰¹	1.1	1.6	YES	YES	no
4,4'-DDD	7.20x10 ^{00 d}	nr	0.0076	no	no	no
4,4'-DDT	7.00x10 ⁰⁰	nr	0.0094	no	no	no

^a Unless otherwise noted, values are from http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/Generic_Tables/, February 21, 2011. When carcinogenic (risk) and non-carcinogenic (hazard) based screening levels were given for a constituent, the lower of the two was selected.

^b From Table A.2-1 of the BRA (Auxier 2000)

^c "YES" signifies that the analyte was selected for quantitative risk evaluation, "no" signifies that analyte was not selected for quantitative risk evaluation.

^d Value from BRA, no updated information identified.

^e nr = not reported

^f Measured on the former Ford property (current Buffer Zone and Crossroad Lot 2A2 properties) before surface grading were performed by the adjacent property owner.

EPA Additional Comment #49.

Comment:

Appendix F, page 11, last paragraph: The report needs to either provide the rationale for using RESRAD, rather than the PRG calculator, in that situation or rerun the assessment using the PRG calculator.

Discussion:

As stated in the opening sentence of Section 4.3.4.2: "*The EPA method described in the previous section does not evaluate risks from buried materials.*" The method under discussion will be clarified in the text. Since the PRG calculator does not calculate risks from a covered source an alternate method must be used.

Proposed Text Change:

The first sentence in Section 4.2.4.2 (the correct section in the new version) in the revised Appendix F has been changed to:

EPA's PRG calculator calculates risks from radionuclides in surface soils. The PRG calculator does not evaluate risks from buried materials.

EPA Appendix F - Risk Assessment # 51

Comment:

51. Appendix F, page 71, Table 10-3, column 5: The source of these concentrations should be explained in the final document. These concentrations appear to be much lower than the survey results.

Discussion:

Footnote “d” identifies Table 5-1 as the source of these numbers. These values (found in column 4 of that table) are the composite concentrations produced by combining the reported analytical results from Area 2 and the Buffer Zone property (formerly called the Ford Property). These numbers came from information published in the Baseline Risk Assessment (Auxier 2000). The use of composite numbers confused several reviewers and the inventory used in the short-term evaluations has been revised and now uses just the Area 2 data, allowing a direct comparison with previously published values.

Proposed Text Change:

The numbers from column 3 in Table A.3-6 of the Baseline Risk Assessment have been used for short-term risk evaluations in the revised draft Appendix F.

EPA Appendix F - Risk Assessment # 50

Comment:

50. Appendix F, page 54, first paragraph, and Table 8-4, second column: The PRG calculator does include external as well as inhalation for the ambient air scenario as does the indoor scenario in the BPRG calculator. The risk assessment should be corrected to include this pathway of exposure

Discussion:

The text was referring to direct exposures from RIM deposits on the site, not submersion exposures in an airborne plume. This attempt at providing a simple screening calculation to establish upper-bound risks to off-property receptors has been removed from the revised draft Appendix F and replaced with the alternate approach requested by EPA reviewers.

Risks to receptors at the site boundary have been reevaluated by estimating air concentrations at the boundary and evaluating the risks to the target receptor from those concentrations. Both inhalation and submersion exposure routes are considered in this quantitative evaluation.

Proposed Text Change:

The revised approach requested by EPA will be used in the revised Appendix F to calculate risks to a boundary receptor from emissions associated with construction activities for each alternative. The text cited in the comment and its accompanying table have been replaced in the short-term evaluations of each alternative.